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NPIC/TSG/RED/SDB-053-70
20 November 1970

MEMORANDUM FOR THE RECORD

SUBJECT: Status Report on the [] Production of 1540 Light
Tables

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1. At present, this project is in the phase of pre-acceptance testing of the first article production light table. Two visits have been made to [] for the purpose of preacceptance testing. The first visit took place from 28 October to 2 November 1970; the second, 11-13 November 1970.

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2. On 5-8 October 1970 [] was visited to review progress of the project. At that time tangible progress was limited to layouts and drawings, quantities of hardware received from suppliers, and wiring harness subassemblies. Delivery of the tables was scheduled to begin the last week in October, and [] was queried as to when they would be ready for preacceptance testing. [] was also advised that they should have completed their own acceptance test procedure (ATP) and be satisfied with the results before inviting government personnel to review and test the first article.

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3. Several contacts were made with [] personnel in October, during which they were asked when the table would be ready for government ATP and again prompting that [] should perform their own ATP before a government visit. Finally, [] advised that they were ready for a visit on 28 October and had performed their own ATP. Representatives of IEG, IAS, DIAAP-9, ESD, and RED travelled to [] on 28 October. After arrival, the ATP was successively put off a few hours on the 29th, until the next day on the 30th, and finally until the afternoon of the 31st. The immediate question on arrival that afternoon at [] was, "Is the table ready?" Answer: "Yes." Question: "Did you perform a complete ATP satisfactorily?" Answer: "Well--partially." It was subsequently discovered that [] had finished assembling the table only an hour before our arrival, a very minimum of testing had been performed, and [] and the government was going through the ATP together for the first time. [] admitted they had taken a calculated risk in inviting our presence--and lost.

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4. The ATP performed on 31 October uncovered major faults in the optics carriage motion and drive, excessive noise in the elevating and tilt mechanisms, and improper tracking of 70mm film. Several minor faults were discovered such as improper and inconvenient operation of cover locks, inconvenient optics mount lock screws, and glass viewing surfaces not parallel. That evening the list of problems was reviewed and discussed. Again, [] was advised to complete the table and perform their own ATP satisfactorily before inviting the return of government personnel.

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5. In the interim between visits, several contacts were made with [] to determine progress and their readiness for a second visit. [] was advised that the contract monitor was to precede any other government personnel so as to pre-determine readiness for testing. Again, [] was advised to complete their own ATP.

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6. The contract monitor was advised of readiness for a second visit on 11 November. On that date the table substantially met the requirements of the ATP, but in certain major subjective aspects it was marginal or unsatisfactory. Freedom of movement of the optics carriage in the Y direction and excessive lost motion and looseness in the motorized drive for the carriage Y direction were unsatisfactory. Several of the minor faults discovered during the previous visit had been uncorrected. The discrepancies were discussed with [] personnel, and [] requested that the PI's be brought out so that they could discuss some of the more subjective aspects with them.

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7. On 12-13 November the table was subjected to a careful and thorough ATP and operational evaluation. It was confirmed that the optics carriage Y-drive and motion was unsatisfactory. Furthermore, the optics mount tended to drift downward from an original position after a weight had been placed on the mount, and the optics mount would not translate low enough so as to allow focus by the [] Measuring Macroscope. The Y direction carriage motion had too much backlash or lost motion when locked up and supposedly immobilized; the backlash tended to increase with use. Also, it was determined that the translation speed of the optics mount was different in the X and Y directions. All faults discovered, both major and minor, were discussed with []

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8. Problems with parts and component suppliers were surfaced that indicated a real problem with the delivery schedule. These problems seemed to indicate a slippage in delivery even though [] was still saying they would be on schedule or very close to it. As of 13 November, only seven tables were in varying stages of assembly and waiting for the delivery of necessary parts. However, many stands were assembled and many subassemblies ready.

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Specifically, a supplier of film drive castings and idler bracket die castings in [] is not producing according to expectations or promises. Forty of the film drive castings are expected to be completed by 16 November with shipment on 25 November. This is sufficient for ten tables only, and it is expected to be a critical item. Default here will force [] to resort to sand castings, which can be produced rather quickly, but at extra cost.

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As another example, the supplier of the optics ring mount, a machined part, produced some 450 of these items. Of these, about 37 were acceptable and 413 unacceptable. The supplier cancelled out because he was losing too much money. [] must now resort to their second source of supply. Production rate of these parts could be something like 150 per week beginning in two or three weeks. Thirty-seven of these parts supply a like number of tables. If these parts are not supplied in quantity by 1 December, a very serious problem results and the schedule of 145 tables by early January 1971 cannot be met.

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In addition to these two citations, there were at least four other supplier problems of similar or less seriousness.

9. With respect to the contractual requirement of 145 tables by early January, the following conjectural delivery schedules should be considered:

	November			December		
Week Beginning	22	29	6	13	20	27
Tables Delivered	5	21	29	30	30	30
		5	20	33	43	43

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It is apparent that unless sufficient quantities of all parts are delivered before the week beginning 29 November, delivery of the required number of tables becomes very questionable. Indeed, producing 43 or 44 tables per week is very questionable. However, when suppliers start producing as promised, assembly and production of the tables will probably proceed at a surprising rate.

10. On 17 November a telephone conversation with [] indicated that several of the minor faults had been corrected with most other corrections to be completed by 21 November. Three major problems exist: (a) the downward drift of the focus mechanism, (b) the difference between the optics carriage X and Y motion speeds, and (c) the backlash or lost motion in the optics carriage Y drive. With respect to (a), [] is looking at the sprag clutch that is supposed to lock the focus mount in position. Replacing this clutch may cause a supply problem. The second problem, (b) above, is considered to be a change-in-scope. [] feels that the present motions are in spec. To make X and Y speeds equal will require redesign so as to provide separate feedback systems for both X and Y. Design cost for this modification is estimated to [] Cost to include the modification in the tables is estimated to be [] per table. With respect to (c) above, [] feels that this is a clutch problem in that the clutch was initially out of backlash tolerance and loosens up with use. The manufacturer of the clutches has been contacted and believes they have a fix. However, delivery and installation of a new clutch is expected to take at least a week and probably more. This also will probably affect the delivery schedule.

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Project Monitor

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Distribution:

Original - Route & File

1 - Contract File

1 - SDR/RED/TSG/NPIC

NPIC/TSG/RED/[]

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